

REMARKS

Reconsideration of the above-identified application is respectfully requested.

Applicants note that an RCE was filed on January 14, 2004. On January 16, 2004 a Supplemental Response including a Declaration of Daniel F. Graves was submitted. The subject office action was issued on March 1, 2004. The Declaration is not discussed in the present office action. Applicants therefore conducted a telephonic interview with the Examiner concerning the status of the application and the Declaration. In the course of the interview, the Examiner indicated that the Declaration had been received. The Examiner made a brief review of the Declaration during the telephonic interview and stated that the Declaration would not be found persuasive because it did not make direct experimental comparison of the presently claimed invention to the polymers of Hudson. The Examiner also stated that any conclusions proffered by Applicants' expert would not be persuasive because the process of Hudson utilized anionically polymerized polybutadiene which would be expected to have the same properties as the presently claimed invention.

Turning now to the rejections, Applicants note that claims 9 and 21 are rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner notes that these claims are dependent upon a rejected base claim. Claim 9 has been amended and withdrawal of the rejection is respectfully requested.

Claim 31 is rejected under 35 U.S.C. §112, first paragraph as failing to comply with the restriction requirement. The Examiner states that the concentration range 0.5 to 1 does not have direct support in the specification as the disclosure of the specification states "up to more than 1". Cancellation of this claim obviates this rejection.

Claims 1-3, 6, 7, 9-10 and 21-33 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hudson in view of Milkovich and Carson. The Examiner states

that Hudson teaches a process for the preparation of a polymer of conjugated dienes by anionically polymerizing conjugated dienes such as butadiene and optional vinyl-substituted aromatic compounds such as styrene in the presence of organolithium initiator and polar compound of diethyl ether, and terminating the polymerization with an excess amount of carbon dioxide (col. 3, lines 12-45 in Example 1) to provide carboxylate terminated polymer. The Examiner states that Hudson also teaches that a semisolid and solid terminally reactive polymer can be prepared having a molecular weight up to 150,000 or higher (col. 4, lines 32-36). The Examiner concludes that a skilled artisan would have understood that a semisolid or a high solid polymer would be baleable. The Examiner continues by stating that although Hudson does not expressly teach the solution viscosity and bulk viscosity of the butadiene polymer, Hudson's semisolid and solid polymers have molecular weights of up to 150,000 or higher, encompassing the molecular weight range of the polymers of the instant claims and are made by processes using catalyst compositions which are substantially identical to those disclosed in the instant specification. Therefore, a skilled artisan would have expected Hudson's semisolid and solid polymers to inherently have solution viscosity and bulk viscosity which encompasses those of the instant claims.

The Examiner makes a number of assumptions concerning the characteristics of the Hudson polymers. Moreover, the Examiner contends that because Hudson uses an anionically catalized polymerization process, the resultant polymers would inherently possess the properties of Applicants' claimed invention. Based upon this assumption, the Examiner, during the telephone discussion, dismissed the Graves' Declaration wherein based upon a review of the polymerization process and a knowledge of the applications for the polymers, Graves concludes that the polymer propellant binders of Hudson would not possess the bulk viscosity of greater than 45 and a solution viscosity of less than 75 cP. Nonetheless, the Examiner asserts that the Graves declaration must provide an analytical comparison between Hudson and the presently claimed invention to be persuasive. However, the Graves declaration is

provided not to challenge the teaching of Hudson, but rather, to challenge the Examiner's inherency conclusion. Moreover, inherency is a necessary result, not just a possible result. Notwithstanding this legal guideline, the Examiner's conclusion is based on a possible result. Particularly, the Examiner suggests that the generic process of polymerization and the molecular weight are the factors that teach what the viscosity and the baleability of the Hudson polymers would be. Based on these two factors the Examiner concludes the Hudson polymers necessarily overlap Applicants claimed viscosity ranges and meet the baleability requirements. However, viscosity and baleability are determined by several properties, such as the amount of branching and ionic association between polymer chains. In this regard, despite the fact that molecular weights up to 150,000 are disclosed in Hudson, the disclosed polymers would not have Applicants' claimed viscosity characteristics. This conclusion is supported by the Graves declaration wherein the Applicant points out that the Hudson polymers are stated to be propellant binders. Applicants material would be a polymer wholly unsuitable for such a purpose. Perhaps if Hudson were directed to a polymer for use in high impact styrene, the assumptions made by the Examiner would have creditability.

With regard to the Examiner's contention that a process using similar catalytic systems must yield a similar molecular weight and viscosity compound, Applicants note that the molecular weight and viscosity characteristics are also heavily controlled by catalyst concentration. Furthermore, the temperature of the catalytic reaction controls branching which further effects the relationship between molecular weight and viscosity. Similarly, the presence of modifiers such as 1,2 butadiene further control branching which again effects the relationship of molecular weight to viscosity. In this regard, the Examiner cannot fairly conclude that simply because Hudson uses anionic polymerization and butadiene, that he necessarily produces a baleable polymer having a Mooney viscosity and solution viscosity overlapping the presently claimed invention. Again, and as stated above, this conclusion is further buttressed by the fact that Hudson is stated to be a polymer propellant binder system which would not function

if it were to have the properties of the presently claimed invention. The Examiner cannot ignore this portion of the Hudson teaching. In this regard, the 2.16 poise Hudson material does not overlap Applicants claimed solution viscosity of less than 75 cP. If the Examiner's rationale that polymerization with similar catalyst yields a highly similar polymer is correct, why is Hudson's viscosity is so divergent from that claimed by Applicants.

Turning next to the remaining pending claims, Applicants note that with respect to claim 3, Hudson fails to teach copolymerizing additional monomers including vinyl aromatic hydrocarbons and alkenes with the conjugated diene. With respect to claim 6, Hudson fails to teach adding carbon dioxide in an amount of at least about 0.5 molecular equivalent to the organolithium initiator. With respect to claim 9, Hudson does not teach a polar compound added to the carboxylate terminated compound. Similarly, there is no teaching of the polar compound being selected from the maleic anhydride, tetramethyl ethylene diamine or to ethylhexanoic acid (claim 21). In addition, Hudson fails to teach the significant advantage of reducing solution viscosity by using these compounds as shown in the specification at Example 2. There is no teaching in Hudson of additional vinyl modifier as presented in claims 29 and 30. Similarly, there is no teaching of the addition of a polar additive as set forth in claims 32 and 33. Importantly, Applicants note that the presence of diethyl ether in the Hudson process to fluidize the polymer solution is not equivalent to the utilization of a 1,2 microstructure modification agent, as claimed by Applicants.

In view of the above, Applicants submit that the presently claimed invention distinguishes over the references of record and allowance is respectfully requested. If there is any fee due in conjunction with the filing of this response, Applicants authorize deduction of that fee from Deposit Account No. 06-0308.

Respectfully submitted,

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